FLOW DIAGNOSTICS EQUIPMENT

Flow diagnostics such as model surface pressure and flow field conditions can be carried out with various techniques and equipment. Model surface pressures are measured by a PSI 8400 pressure scanning system. The PSI 8400 scanning system is capable of measuring 256 pressure taps. Flow field measurements over a model can incorporate several methods, such as flow visualization, Laser Doppler Velocimetery (LDV), and hot wire anemometry. Quantitative flow field measurements can be made through the use of a TSI three component LDV, a TSI three component hot wire anemometer, and various types of pressure probes (Pitot, Pitot static, seven tube, etc.). The LDV system nonintrusively measures the flow field. Flow visualization tests can make use of several techniques. Surface flow visualization can make use of titanium dioxide oil, fluorescent oil, and tufts. Smoke flow visualization may be carried out by introducing propylene glycol vapor into the flow or using a smoke wire. A movable laser sheet enhances the use of smoke to assist in data interpretation. Photographic and/or video equipment is also available for recording data and configuration setups.

These flow diagnostic tools are resident in the Naval Air Warfare Center Aircraft Division Aerodynamic Test Facility and support testing, as required.

For more information contact the Aerodynamic Test Facility at the Naval Air Warfare Center Aircraft Division at Patuxent River, MD at 301-342-8535 or 301-342-8548.